



Mouth-Breathing Seen by Speech-Language Pathologists (SLP) in Their Practices

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Introduction

Human communicative ability is made possible through language, and it starts in early childhood. Spoken language is a motor capacity in oral transmission of information, attitudes, and emotions, according to each person's thought and experience. Production of speech consists of coordinated movements of the breathing mechanism, which produce a flow of air through the vocal tract. This airflow is modified by articulation in order to produce the sequences of phonemes that represent consonants and vowels. Therefore the production of speech is related to the balance among respiratory, phonatory and articulatory mechanisms. Any problem in one of these three mechanisms can cause an alteration or an overload in the other two, leading to a disorder in production of speech. Among problems with these mechanisms, mouth-breathing, especially in childhood, deserves special attention. The aim of this article is to analyze the management of mouth-breathers in the pediatric population as seen in daily practice by Speech-Language Pathologists (SLP).

Prevalence

There are not many studies about the prevalence of mouth-breathers among children. In research with Brazilian children three to nine years old, from Abaeté (Minas Gerais), the prevalence was 55% (Abreu et al., 2008). In another study done with children in Pernambuco who were between eight and ten years old, the prevalence was 53,3% (De Menezes et al., 2006). Although the prevalence was high, more studies are necessary to verify correlations among the variables of age and socio-economic conditions.

Patient's Complaints

In an SLP practice, there are normally two situations in regard to the arrival of patients with a respiratory and/or a speech disorder:

- 1) the child and his or her family come to the SLP recommended by an otorhinolaryngologist or pediatrician, with a diagnosis of mouth-breathing and its associated manifestations, if there are any;
- 2) the family brings the child directly to the SLP due to complaints with voice and/or articulation, but does not realize there is mouth-breathing. If they do, it might not seem related to their concerns regarding production of speech.

The main vocal complaints can be due to the quality of the voice, its pitch and/or

loudness. In the articulatory area the concerns mostly regard inability to produce some phonemes, misarticulations, frontal or lateral lisp, imprecise articulation, or difficulties in intelligibility of speech.

Diagnostic Process

In both situations, the initial interview with the patient's history and the clinical evaluation can provide other signs and symptoms of mouth-breathing that are important for the physician and for the process of SLP rehabilitation. In an SLP practice, in the interview with the parents, besides the patient's history, **two items** can provide significant information:

- 1) The presence of some **eating disorders**, especially regarding a restrictive menu, including the preference for food with a soft consistency. Sometimes parents also complain that the child eats too fast, too slow, or has some digestive disturbances, halitosis, and dry mouth. These data might indicate a difficulty in oral function regarding mastication and/or swallowing associated or not with possible alterations in taste and olfaction.
- 2) The presence of **behavioral manifestations** like fatigue, agitation, impulsiveness, difficulties in concentration and learning disabilities that could be indications of sleeping disorders due to the respiratory problem.

The SLP **clinical evaluation** consists of:

- 1) **Observations** of possible presence of dental malocclusion, craniofacial alteration, sad facial expression, and under- or overweight. There might be also a deviation in posture of the head and neck that affects entrance of air through the mouth. Hyperextension of the neck compensates the lower jaw in these cases and can lead to modifications in cervical curvature. Meanwhile, these deviations in posture also play an important role in some vocal disorders.
- 2) **Evaluation of the orofacial organs** regarding tonus, posture, and mobility. The presence of problems with proprioception and sensibility of the oral cavity deserves special attention as well.
- 3) **Assessment of oral functions** such as food-biting, sucking, mastication, and swallowing should be made with regard to varying consistencies of food. Speech, including evaluation of the voice, can be assessed through specific tests and/or informal activities. Any incoordination among oral functions must be assessed.

After the interview and the evaluating process, in patients who mouth-breathe and who came directly to the SLP without recommendation from a physician, diagnosis and orientation with an otorhinolaryngologist is the first step, in order to understand if there are any anatomic and/or functional limits for therapy, including any presence or not of allergies. The recommendations of other professionals such as an allergist, dentist, or physiotherapist might be required, because management of a mouth-breather may involve other professionals and teamwork.

Treatment

After the diagnostic process and appropriate professional recommendations, there are basically **four important steps** in intervention by the SLP in order to manage this respiratory disorder and its associated manifestations:

1. Awareness

In pediatric populations, compliance and motivation by the family and the patient are important for successful intervention. Explanations of the anatomy and functioning of the nose and breathing mechanisms and the importance of nasal breathing are very helpful. Understanding that even though the patient's initial complaints were not in the respiratory system, although the respiratory system plays an important role or might be responsible for the articulatory and or phonatory alterations should be the first step in treatment. Even small children can learn about these aspects with the use of creative stories appropriate to their ages.

2. Recovery or implementation of nasal breathing

At this step, an important point is to be aware that the nose has to be clean, as especially small children don't like to blow their noses. Without a clean nose, all exercises and tasks provided in therapeutic sessions can be less effective. In therapy sessions and even at home, the use of a Glatzel mirror provides an important measure in order to achieve better results and follow-ups. The family plays an important role in this process, because normally children come to an SLP practice once or twice a week for 30 to 45 minutes sessions, but on other days nasal hygiene cannot be forgotten.

In case of a nasal obstruction due to allergies, besides treatments provided by physicians it is important that the family follows their recommendations about modifications that can be done at home. Among these may be the removal of carpets and curtains, appropriate care with air conditioning or heating systems, avoidance of domestic animals, smoking habits and use of perfumes, or even changing some cleaning materials used at home. A joint effort is important from both sides: the child with his or her SLP exercises, and the parents with possible environmental changes. In Sao Paulo, Brazil, as in some other cities around the world, there is another factor to be added: depending on the season of the year, weather conditions combined with air pollution can worsen the symptoms of allergies. In order to encourage the treatment of allergic patients it is important to remind them that the allergic symptoms are not present every day, 24 hours a day, and treatments will be adapted according to possibilities for the patient and orientation from the otorhinolaryngologist. The correction of body posture is also important and, depending on the case, the patient can also be recommended to a physiotherapist for assistance.

3. Techniques for the improvement of sensibility, proprioception, tonus, posture and mobility of the phono-articulatory organs.

In this step it is important to keep in mind the articulatory and or phonatory disorders, in order to provide specific exercises preparatory to a successful outcome in these areas. For each patient there are special exercises.

4. Management of disturbed oral functions: food-biting, mastication, swallowing, and speech (phonation and or articulation)

Special attention should be given to the feeding habits of the child in this step. In many cases, the olfaction and tasting of food are altered and rediscovery of them can be motivational. In chewing and swallowing disorders, dealing with different consistencies of food brings a challenge and helps in the improvement of function. Again, the family plays an important role in this phase also, providing new feeding experiences according to orientation by the SLP. After the implementation or recovery of nasal breathing, the exercises and techniques for articulatory and phonatory disorders obtain more successful outcome.

Conclusion

A mouth-breather deserves special attention and early intervention in order to avoid a larger amount of manifestations. Although there are many proposals regarding working in a team, in the Brazilian reality there may be socio-economic barriers. All these treatments together can be very expensive. Although many health insurance companies can offer them, it is not very usual and only some of them, with higher rates, can cover these treatments. Meanwhile, there are some free or less expensive services at universities or some institutions, but they normally have long waiting lists. Therefore, as early intervention could mean fewer costs, an educational program especially in schools regarding the development of awareness of consequences and signs and symptoms of an oral breather should be encouraged.

Recommended readings

1. Abreu RR, Rocha RL, Lamounier Ja, Guerra AF. Etiology, clinical manifestations and concurrent findings in mouth-breathing children. *J. Pediatr(Rio J)*. 2008.Nov-Dec;84(6): 529-35.
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5. Sih T. How I deal with rhinosinusitis in children: practical, objective and informal considerations. In: Sih T (Coord). VII IAPO Manual of Pediatric Otorhinolaryngology. São Paulo, Brazil: Vida & Consciência 2008; 131-138.